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ABSTRACT

This study assesses the feasibility of predicting children's verbal attainment scores by examining mothers' education and parenting styles and children's experience of preschool. Data are derived from a group of 5,362 children born in England, Wales, and Scotland in March of 1946. The parenting styles have been studied from the time the parents' firstborn children were 4 years old. Tests administered when the children were 8 years old assessed the children's abilities in vocabulary, reading, and sentence completion. Study findings focused on five areas: (1) parents' educational and socioeconomic characteristics in relation to their children's preschool experience; (2) styles of parenting as associated with children's preschool attendance or nonattendance; (3) maternal assessments of self and child; (4) association of preschool experience and parenting characteristics, styles, and self-assessments with children's verbal attainment scores; and (5) verbal attainment of children who experienced relatively low levels of maternal stimulation. Although preschool experience was an independent and significant predictor of verbal attainment scores, its power was small when compared with mothers' education. In addition, preschool attendance had no significance in predicting the scores of children whose mothers were relatively understimulating. (DST)

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EFFECTS OF PARENTING STYLE AND PRESCHOOL EXPERIENCE ON CHILDREN'S VERBAL ATTAINMENT: RESULTS OF A BRITISH LONGITUDINAL STUDY

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Abstract

In order to assess the relative strengths of mothers' education, parenting styles, and children's experience of preschool in predicting children's verbal attainment scores, this study made use of data derived from a cohort of children born in England, Wales, and Scotland in March of 1946 (N = 5,362). The parenting styles of cohort members have been studied from the time members' firstborn children were 4 years old. Tests administered when these second-generation children were 8 years old assessed children's abilities in vocabulary, reading, and sentence completion. Although preschool experience was an independent and significant predictor of verbal attainment scores, its power was small when compared with mothers' education. In addition, preschool attendance had no significance in predicting the scores of children whose mothers were relatively understimulating.

Parents are usually the most constant and continued influence on children, and it is not surprising, therefore, to find that Kagan, Kearsley, and Zelazo (1978) could conclude that "the educational level of the family is the best predictor of both IQ and reading skill" (p. 147). Similarly, Douglas (1964) found in a large prospective study conducted in Britain that "within each social class . . . the parents who gave their children the most encouragement in their school work also give them the best care in infancy. The children who are encouraged in their studies by their parents do better in each type of test, in picture intelligence as well as in those of reading vocabulary and arithmetic" (p. 54).

But can those children who do not have a stimulating home life and a reasonable degree of parental encouragement be helped to greater educational attainment by preschool experience? And, if so, is preschool experience being used to its best advantage by the children who need it most? These are important questions, especially in Great Britain, where a considerable increase in demand for and provision of preschool facilities has taken place in the last 2 decades (Osborn, 1981). Answers to some of these questions can best be provided by longitudinal investigation if the study covers a sufficient period of time during children's development and if the study population is large enough to contain a wide variation in parental educational achievements and childrearing practices.

In the large prospective study quoted above (Douglas, 1964), participating children continued to be followed up after leaving school. In addition, when in due course this group began families of their own, data on their childrearing behavior and their children's attainments in reading and vocabulary were also collected. Information from this two-generation investigation has been used in the present study in an attempt to assess

the relative strength of parents' childrearing practices and their children's preschool experiences in predicting the children's later verbal attainment.

At the age of 8, the 1,676 firstborn children of participants in the longitudinal study reported by Douglas (1964) took tests of verbal attainment. Specifically, the present discussion reports the relative strength of four sets of data, collected earlier, in predicting these test score results. The data whose predictive value is tested include

1. The preschool experience of second-generation children up to age 4;
2. Mothers' reports of their management of problem behavior and of their interactive play and stimulation with their children at the age of 4;
3. Mothers' assessments of some aspects of their parenting behavior and their assessments of their children's maturity and nervousness at age 4;
4. Information collected during parents' own childhood on their educational achievements, teachers' ratings of the parents' application to schoolwork in their third year of full-time schooling (at age 8), and data on parents' and grandparents' ultimate educational achievements.

First, generational differences in the use of preschool will be outlined. Next, associations among the four sets of data detailed above will be considered in light of the verbal attainment scores of second-generation children. Finally, the relative independence of the four sets of data in predicting verbal attainment scores will be described.

Data used in both the present investigation and the earlier prospective study are from the Medical Research Council National Survey of Health

and Development. A summary of the structure of the earlier study is given in Atkins, Cherry, Douglas, Kiernan, and Wadsworth (1981) and in Verdonik and Sherrod (1984). Five books and 147 papers report on analyses of the data; summaries of work on education may be found in Douglas (1964), Douglas, Ross, and Simpson (1968), and Rodgers (in press).

Method

Subjects

This prospective study began as an investigation of birth and the social circumstances of birth of all babies born in England, Wales, and Scotland in March of 1964. Data were to be used in planning for the National Health Service, which began 2 years later in 1948. A sample of the population of these births was taken for follow-up. Multiple and illegitimate births were excluded; the cohort then followed up was composed of all single, legitimate births to wives of nonmanual and agricultural workers and one in four of all single, legitimate births to wives of manual workers. The total sample included 5,362 children.

Statistical weighting has been used to compensate for the effect of sampling one in four children from manual class homes. When such weighting is applied to the findings of this cohort, subjects are found to be representative of the British population of their age (Atkins et al., 1981). Losses through death and emigration have occurred at age and birth-year appropriate rates. At the last contact, which was made at a home visit when subjects were 36 years old (n = 3,322) 84% of those still alive and residing in England, Wales, or Scotland were interviewed.

Since 1969, when cohort members were 23 years old, a study of their behavior as parents has been carried out (Wadsworth, 1981; Wadsworth, 1985; Wadsworth, in press; Wadsworth, Peckham, & Taylor, 1984). This second-generation study took the form of a home visit to both male and female subjects when their firstborn was 4 years old and again when the firstborn was 8 years old. Mothers were the informants at these interviews. The rate of refusal in those eligible for interview in the second-generation study generally has been low, ranging from none at age 27 to a maximum of 11.6% at age 22. The mean refusal rate was 6.3%. The present study reports data collected from 1,676 mothers interviewed between 1969 and 1975. Cohort members were between 23 and 29 years old and had therefore given birth between the ages of 19 and 25 to second-generation study children.

Procedures

Contact was made with the cohort of 5,362 children born in 1946 at intervals of 2 years or less in infancy, childhood, adolescence, and at intervals of approximately 5 years in adult life. In childhood and in the school years, data were collected by teachers and community and school nurses. In adult life, information was obtained by community nurses, self-reporting, and a team of specially trained interviewers and nurses. Data collection has always been as broadly based as possible, and almost all contacts have included information on home and family circumstances and health, and, at age-appropriate times, on education, occupation, and behavior.

In the second-generation study, professional interviewers carried out semistructured interviews with the mother during home visits, at which a wide range of medical, social, and psychological information was collected.

These interviews were designed first to collect data to permit intergenerational comparisons of childhood health and the use of preschool and later to evaluate school facilities and verbal attainment. Interviewers also collected information about the parenting practices of the men and women in the birth cohort so that both long and short term antecedents of parenting might be studied.

Data on second-generation children at age 4 included information on how children spent their time and their degree of independence; parents' discipline methods, and childrens' habits and dreams; health and illness; family structure; and the mother's assessment of herself and the child. Since British children begin compulsory education between the ages of 4½ and 5, interviews conducted when children were 4 thus preceded full-time education and interviews held when children were 8 occurred 3 years after the beginning of compulsory education. During these latter interviews, children were administered three tests of verbal attainment. The tests were of reading (ability to read and pronounce a series of words), sentence completion (ability to complete an unfinished sentence with an appropriate word), and vocabulary (ability to explain the meaning of a word). These same tests had been administered in 1954, when cohort parents were 8 years old. Each test was made generation-fair by replacing such outdated words as "muslin" and "guinea" with words of comparable difficulty and by reordering all words in the tests for facility value order. The tests in their original form are described by Douglas (1964). Test score data have been normalized from the raw scores and converted to T scores with a mean of 50 and a standard deviation of 10.

Findings

Study findings focus on five areas: (a) parents' educational and socioeconomic characteristics in relation to their children's preschool experience; (b) styles of parenting as associated with children's preschool attendance or nonattendance; (c) maternal assessments of self and child; (d) association of preschool experience and parenting characteristics, styles, and self-assessments with children's verbal attainment scores; and (e) verbal attainment of children who experienced relatively low levels of maternal stimulation.

Parents' Educational and Socioeconomic Characteristics in Relation to Their Children's Preschool Experience

In the second-generation study population, the modal amount of time spent at state preschools was 2½ days a week; at privately run preschools it was 2 days per week. In a majority of cases, these amounts of time were made up of half-days. The mean amount of time spent at state preschools was 4½ days a week, as compared with 3 days in all other preschools. The modal age for starting preschool of any kind was 36 months, and the modal length of time spent attending preschool was 18 months.

As Table 1 shows, a comparison of the two generations reveals a considerable increase in the percentage of children receiving some kind of preschool experience (from 13.1% for the first generation to 81.9% for their children). During this time, national increases occurred in the use of preschool facilities of all kinds, especially in those that were privately run (see also Osborn, 1981).

Insert Table 1 about here

Socioeconomic status for first-generation parents whose children went to preschool was not significantly different from the status of those whose children did not. This situation was perhaps the result of the high rate of mothers working during the postwar period and the more equitable availability of preschool places that were consequently provided. In the second generation, however, differences were marked, with 87.4% of non-manual class families' children using such facilities, as compared with 68.4% of children from manual class homes.

In addition to socioeconomic differences, important differences in achieved educational levels were found to exist between parents using preschool and others. Specifically, 71.6% of nonuser parents, as compared with 41.8% of user parents, had completed their education without gaining even minimum qualifications at the end of compulsory schooling at age 16. It was not surprising to find that cohort member parents who sent their children to some kind of preschool also had scored significantly higher than nonuser parents on tests of verbal, nonverbal, and mathematical attainment at the age of 15 years, regardless of their family's socio-economic position at that time. At age 10, 46.3% of preschool user parents had been rated by their teachers as hard workers, as compared with 36.2% of nonuser parents ($x = 10.32$ with 2 d.f. $p < .01$). In fact, not only were the parents of children who went to preschools more likely to be better-educated than other parents, but the amount of education received in two previous generations was significantly associated with present use of preschool facilities of all kinds, as Table 2 shows.

Insert Table 2 about here

Styles of Parenting: Management of Problem Behavior

Data on three aspects of parenting were taken from the interviews involving second-generation 4-year-olds. The three aspects considered here are mothers' reports of their management of problem behavior, including use of punishment; management of play and stimulation; and, finally, assessment of certain behavior in the children and themselves.

Although prevalence of bed-wetting was no greater among children in preschool than others, 24.4% of mothers using preschool said that they reacted angrily when bed-wetting occurred, as compared with 35.5% of nonuser mothers ($x = 4.8$ 1 d.f. $p < .05$). Mothers whose children did not go to preschool also reported significantly more often that they were inclined to use harsher forms of punishment. These mothers more commonly threatened not to love the child any more as a form of punishment (15.5% of nonusers, as compared with 9.1% of users, $x = 11.35$ with 1 d.f. $p < .001$); more often threatened to send the child away from home (21.8% of nonusers, as compared with 14.9% of users, $x = 5.83$ with 1 d.f. $p < .05$); and more often actually used or threatened to use an implement, such as a stick or shoe, to beat the child (23.6% of nonusers, as compared with 16.3% of users, $x = 9.16$ with 1 d.f. $p < .01$).

Parent behavior that involved play with and stimulation of the child was reflected in indicators of how boredom was reportedly managed, whether the mother joined in pretend games, whether the child invented imaginary playmates, and the frequency of the mother's storytelling. Although mothers and children who joined together in pretend games were

no more likely to be preschool users than others, significant differences in preschool use were associated with the other indicators. User mothers more often said that they coped with their 4-year-olds' boredom by suggesting and taking part in a game (58.2% of user mothers, as compared with 45.9% of nonusers, $x = 16.34$ with 1 d.f. $p < .001$). Similarly, user mothers more often read or told stories to their children (77.2% of user mothers, as compared with 57.6% of nonusers, $x = 53.02$ with 1 d.f. $p < .001$) and more often reported that their demonstrations of affection for each other were warmly and mutually initiated rather than reserved or not mutually initiated (82.3% of user mothers as compared with 66.5% of nonuser mothers, $x = 40.88$ with 1 d.f. $p < .001$).

Maternal Assessments of Self and Child

In the course of the interview involving 4-year-olds, mothers were asked to rate their parenting behaviors and some aspects of their children's behavior on a number of scales. The first scale asked whether mothers felt that their child was particularly excitable or highly strung. Significantly more nonuser mothers assessed their child as being highly strung (55.4%), as compared with user mothers (48.8%, $x = 4.54$ with 1 d.f. $p < .05$). However, there were no statistically significant differences between user and nonuser mothers on scales rating their perceptions of their children's backwardness in social and physical maturity.

Mothers also were asked to rate the extent to which they felt happy about their methods of dealing with discipline. Nonuser mothers (47.9%) more frequently reported feeling contented (39.4%, $x = 7.2$ with 1 d.f. $p < .01$). Nonuser mothers also described themselves as more easygoing about discipline (60.9%) than their user counterparts (47.7%, $x = 18.35$ 1 d.f. $p < .01$). Finally, a score was made of mothers' reports of evasion or

distortion of the truth. A measure devised by Newson and Newson (1968) in another British study of mothers of 4-year-old children was used. It is a simple additive indicator on which mothers score 1 point for each report of evasive behavior on questions concerning where babies come from, threats of punishment by an authority figure, threats to leave the child or to send him or her away as a punishment, and avoidance of telling the child if they are going out. Thus, the higher the score, the greater the mother's evasive behavior. Mothers who had not sent their child to preschool were significantly more likely (16.0%) to have had scores of 2 or more when compared with user mothers (10.1%, $x = 9.32$ with 2 d.f. $p < .01$).

Association of Parental Characteristics, Styles, and Self-assessments with Children's Verbal Attainment

It is clear from these descriptions of parental characteristics, styles, and self-assessments that mothers who made use of any kind of preschool had, in each of these three categories of data, relatively high levels of interaction with their child. Although they had more worries about discipline, they were significantly better-educated and more often than nonuser mothers reported themselves to be less punitive, more affectionate, and more stimulating and imaginative in terms of coping with boredom in their children. In addition, they less often believed their child to be particularly excitable or highly strung in comparison with others.

Of course, many of these kinds of maternal behaviors and self-concepts have already been established as being typical of better-educated mothers (Hardyment, 1984; Kohn, 1963; Newson & Newson, 1968), and it is evident in this study that better-educated mothers made greater use of preschool facilities than those mothers with less education. Therefore, a

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multivariate analysis was used to determine whether these three strands of information were independently associated, if at all, with children's scores on three tests of verbal attainment at 8 years--that is, 4 years after the data so far reported had been collected.

Specifically, data on the use of preschools and on factors significantly associated with preschool use were used in stepwise multiple regression analyses to test for independence of association with verbal attainment scores achieved on tests of vocabulary, reading, and sentence completion. The first set of analyses used each test score as an independent variable and assessed the statistical significance of the association of two sets of dependent variables. First, maternal education, child's preschool attendance, and data on styles of parenting were analyzed; then maternal education, child's preschool attendance, and data on maternal assessment of self and child were considered. Those dependent variables that remained significantly associated with attainment scores were then used in three further stepwise multiple regression analyses. These analyses examined separately for each verbal attainment score the association of all the variables already shown to be significantly associated with that score. Results are shown in Table 3.

Insert Table 3 about here

The importance of the mother's level of educational achievement is paramount in each of the three tests; when vocabulary was the independent variable, the mother's education accounted for 12.0% of the explained variance in the test scores (17.4% of variance was explained in all). In the case of reading, it accounted for 10.8% of explained variance in

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scores (13.1% of variance was explained). For sentence completion, it accounted for 10.3% (12.6% of variance in scores was explained). Nevertheless, preschool use remained significantly associated with each test of verbal attainment, and so did a majority of the variables that described the closeness and degree of stimulation in mother/child relationships as reported by the mother when the child was 4 years old.

Verbal Attainment of Children Who Experienced Relatively Low Levels of Maternal Stimulation

The variables that were significant in the analysis shown in Table 3 subsequently were used to determine whether verbal attainment scores achieved at the age of 8 years by children who were apparently relatively under-stimulated by their mothers were higher among those children who went to preschool as compared with children who did not attend preschool. Table 4 shows that, in four out of six cases, all three mean verbal attainment scores were significantly higher if the child had attended preschool by the age of 4 years.

Insert Table 4 about here

Although these findings are reassuring, it was also found that a significant increase in mean scores of preschool attenders was only achieved by children of mothers who had received more than the minimum amount of compulsory schooling and who had successfully passed examinations at the time of school leaving or on completion of further or higher education. Children of mothers who had completed their full-time education (in almost all cases, the then-minimum amount of 10 years) without gaining any kind of certificate or diploma did not achieve significantly

higher mean verbal attainment scores. Stepwise multiple regression analyses using all these variables to test combined association with each of the three verbal attainment scores in the population of children who had never been to preschool confirmed this finding. Statistical significance was retained only by the variables describing the mother's education ($p < .01$ for each test). It was evident, therefore, that mother's education subsumed the effect of each of the other variables.

Conclusions

Much as been expected as a result of preschool use. Russell (1926) observed that universal use "could, in one generation, remove the profound differences in education which at present divide the classes" (p. 181). Jolly (1977) advised mothers that "the preschool years are vitally important in influencing the intellectual growth and curiosity of a child" (p. 312). Since, over the generations, preschool has become more available in Britain, it is therefore appropriate to ask what actually has been achieved.

It is regrettable but not surprising to find an unequal increase in the use of preschool, with the greatest increases being made by families with better education and higher socioeconomic status. This finding might be interpreted as being yet another example of middle class parents being more astute and perhaps better able to to take advantage of available facilities. Nevertheless, two reassuring improvements are evident when the generations are compared. First, only a relatively small proportion of the population of second-generation children (18%) did not have any kind of preschool experience. Second, data about the lives of the parents before the index child was born reveal that those who experienced upward

social mobility as a result of education were more likely to use preschool for their firstborn child when they in turn became parents. In the national population, the increasing average length of education and the increasing chances of gaining educational experience and achievement (Social Trends, 1984) may therefore have the effect of heightening future demand for preschool places.

This study also provides evidence that preschool attendance has a beneficial effect on children's verbal attainment scores. However, once the effect of mother's education has been accounted for, the power of preschool attendance and the mother's stimulating behavior during the child's preschool years play a relatively small part in explaining differences in verbal attainment scores. Preschool attendance also was found to be helpful in raising the verbal scores of 8-year-old children whose mothers had been, in comparison with others, relatively understimulating when the child was 4. But here again, the mother's education was by far the most powerful agent in these circumstances, eclipsing any effect of preschool. This finding may indicate that children of mothers with greater educational experience and achievement are better able to make good use of the preschool experience or possibly that they are more likely than others to be able to catch up in schoolwork during the period from 5 to 8 years of age.

It is, of course, necessary to remember that verbal attainment at the age of 8 years is only one of many possible factors that may be associated with preschool attendance. Investigations of other factors may well generate further information. However, results do suggest that children of mothers who had the least educational experience and achievement were not only those likely to be from a poor socioeconomic background and in need of the extra attention and encouragement that preschool may have provided, but also those least likely to have attended.

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Table 1

Percentage of Preschool Attendance in Original Cohort and Second-Generation Firstborn Children

Preschool Experience	Original Cohort	Second Generation
No attendance	86.9	18.1
State-provided preschool	5.8	25.1
Private preschool	7.3	56.8
n (= 100%)	2,272	1,676

Table 2

Educational Achievement of Original Cohort Members and Their Parents in Relation to Percentage of Second-Generation Children in Preschool

Educational Achievement	n(=100%)	Preschool Use		
		None	State	Private
Earliest possible school-leaving/ no later education (both groups)	467	36.6	28.7	34.7
Parents' achievement lower than grandparents' (i.e., inter-generational fall)	221	21.7	23.1	55.2
Parents' achievement higher than grandparents' (i.e., inter-generational rise)	609	14.9	25.0	60.1
Higher education (both groups)[a]	153	9.8	19.6	70.6

[a]Higher education refers to education beyond compulsory schooling to age 15.

Table 3

Results of Three Stepwise Multiple Regression Analyses Using Verbal Attainment Scores as Independent Variables

Independent Variable	Coefficient of regression	F	Significance of F
Vocabulary Score			
Mother's education	3.539	105.863	$p < 0.001$
Attendance at preschool	2.463	12.091	$p < 0.001$
Evasion and distortion of truth	-3.231	13.030	$p < 0.001$
Description of affectional relationship	2.389	11.939	$p < 0.001$
Frequency of storytelling or reading	-	-	NS
Action taken when child bored	-2.099	15.715	$p < 0.001$
Contentment with own methods of discipline	-1.542	8.226	$p < 0.001$
Reading Score			
Mother's education	3.589	106.595	$p < 0.001$
Attendance at preschool	2.460	11.811	$p < 0.001$
Evasion and distortion of truth	-2.175	5.803	$p < 0.001$
Description of affectional relationship	1.639	5.479	$p < 0.001$
Frequency of storytelling or reading	-	-	NS
Action taken when child bored	-	-	NS
Sentence Completion Score			
Mother's education	3.322	83.098	$p < 0.001$
Attendance at preschool	1.754	5.738	$p < 0.001$
Evasion and distortion of truth	-2.876	10.034	$p < 0.001$
Frequency of storytelling or reading	1.713	7.021	$p < 0.001$
Contentment with own methods of discipline	-	-	NS
Self-evaluation of strictness	-	-	NS

Note. NS = not significant.

Table 4

Mean Verbal Attainment Scores of 8-year-old Children in Understimulating Home Circumstances at Age 4: Comparison of Preschool Attenders and Nonattenders

Variable Describing This Population	Test	Mean Test Scores of Preschool Nonattenders		Mean Test Scores of Preschool Attenders		t Test of Difference in Means	p = d.f.
Mother does not take part in activities when child is bored	Vocabulary	45.62		50.12		4.18	< 0.001
	Reading	46.13	n=133	50.67	n=445	4.54	< 0.001
	Sentence Completion	46.83		50.48		3.64	< 0.001
Mother feels reserved and emotionally cool towards child	Vocabulary	44.60		48.80		2.81	< 0.001
	Reading	44.70	n=65	49.09	n=182	3.03	< 0.001
	Sentence Completion	45.47		49.75		2.85	< 0.001
Mother rarely reads or tells stories	Vocabulary	45.21		48.33		2.43	< 0.002
	Reading	46.07	n=102	43.38	n=245	1.87	NS
	Sentence Completion	46.37		48.04		1.33	NS
Mother evades or distorts truth	Vocabulary	43.67		46.99		1.90	NS
	Reading	43.03	n=36	47.84	n=103	2.40	< 0.002
	Sentence Completion	43.78		47.05		1.65	NS
Mother feels discontented with own method of discipline	Vocabulary	46.46		52.48		5.82	< 0.001
	Reading	46.44	n=116	51.71	n=631	5.03	< 0.001
	Sentence Completion	47.18		51.85		4.54	< 0.001
Mother evaluates self as stricter about discipline than most others	Vocabulary	48.30		51.79		2.89	< 0.01
	Reading	48.77	n=91	51.66	n=561	2.52	< 0.02
	Sentence Completion	48.59		51.32		2.39	< 0.02

Note. NS = not significant.